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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/825,612      | 04/03/2001  | Sujit Sharan         | 95-0716.01          | 3507             |

7590                    03/07/2002

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EXAMINER

KILDAY, LISA A

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ART UNIT                  PAPER NUMBER

2829

DATE MAILED: 03/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/825,612             | SHARAN ET AL.       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Lisa A Kilday          | 2829                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 03 April 2001.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 13-18,22-26 and 28 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 13-18,22-26 and 28 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 03 April 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of: .

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                           | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 . | 6) <input type="checkbox"/> Other: _____                                    |

***Priority***

Applicant must insert the patent number of its parent application 09/249,478 in the specification.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "sufficient" in claims 13, and 15 is a relative term which renders the claim indefinite. The term "sufficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The use of "sufficient" in claims 13 and 15 reads on a nebulous mental step conducted prior to the manipulative steps of the claimed process, hence rendering the present process claim unclear in meaning in scope. If applicant wishes to patent detail controls over the recited process, then the process steps must be positively recited.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

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- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 13-18, 22-26, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhao et al. (6,051,286). Zhao et al. teaches a method of making a semiconductor device comprising the steps of forming a product in a PECVD chamber through an interaction of a chemically inert charged species producer gas and a metal-containing compound in a plasma and exposing a substrate (fig. 17 ref. 952) to said product for a period sufficient to form a metal layer (fig. 17 ref. 956) on at least a portion of said substrate (abstract, fig. 19 ref. 1014 & 1015, fig. 21, col. 2 lines 17-18, col. 5 lines 30-35, col. 6 lines 44-46, claims 1-2, claim 22).

In re claim 14 with the limitations of independent claim 13, Zhao et al. teaches that the step of forming a product comprises forming a product free of constituents of said chemically inert charged species producer gas (col. 6 lines 42-45, col. 36 lines 18-30, col. 38 lines 45-56).

In re claim 15 with limitations of independent claim 13 (and 14), Zhao et al. teaches that the step of exposing a substrate to said product further comprises exposing a substrate to said product for a period sufficient to form a metal layer free of constituents of said chemically inert charged species producer gas (col. 6 lines 42-45, col. 36 lines 18-30, col. 38 lines 45-56).

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In re claim 16 with limitations of independent claim 13, Zhao et al. teaches that the step of forming a product further comprises forming a metal containing ion of said metal-containing compound (col. 36 lines 22-27).

In re claim 17 with limitations of claims 13-16, Zhao et al. teaches that the step of forming a product further comprises forming a metal-free ion from said metal-containing compound (col. 36 lines 22-27).

In re claim 18 with limitations of claims 13-17, Zhao et al. teaches a step of introducing a reactant gas to said metal-containing ion and wherein said step of exposing a substrate to said product comprises exposing said substrate to said product and to said reactant gas (claims 24 & 30, col. 36 lines 20-35).

In re claim 22, 24, and 28, Zhao et al. teaches a method of performing a back end of the line process comprising providing a semiconductor device under fabrication, placing said device in a vacuum chamber, supplying a metal source gas and a chemically inert excitation gas within said vacuum chamber and interacting said metal source gas and inert gas (abstract, fig. 19 ref. 1014 & 1015, fig. 21, col. 2 lines 17-18, col. 5 lines 30-35, col. 6 lines 44-46, claims 1-2, claim 22).

In re claim 23 with the limitations of claim 22, Zhao et al. teaches glow discharge (col. 3 lines 5-8).

In re claim 25 with the limitation of claim 24, Zhao et al. teaches glow discharge that interacts combined gases (col. 3 lines 9-15).

In re claim 26 with the limitations of claim 24 & 25, Zhao et al. teaches that the combined gases produced a charged species (col. 3 lines 5-15).

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 13-18, 22-26, 28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 10, 23-25 of U.S. Patent No. 5,946,594. Although the conflicting claims are not identical, they are not patentably distinct from each other because both disclose a process of PECVD deposition of metal films and a chemically inert ion-promoting atmosphere on a substrate.

***Relevant Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kaloyeros et al. (6,090,709) discloses a PPCVD process for depositing metal with an ion-promoting atmosphere at temperatures below 475°C. However, PECVD requires a plasma density greater than 0.5 W/cm<sup>2</sup>.

***Conclusion***

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (703) 306-5728. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry, can be reached on (703) 308-1680. The fax number for the group is (703) 305-3432. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

3/5/02



3-6-02

MICHAEL J. SHERRY  
PRIMARY EXAMINER